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AUTHOR Marcelo, Carlos
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ABSTRACT

The College and University Classroom Environment Instrument (CUCEI) was adapted and validated for the educational context in Spain through use at the University of Seville. The seven scales of the CUCEI are: (1) Personalization; (2) Involvement; (3) Student Cohesiveness; (4) Satisfaction; (5) Task Orientation; (6) Innovation; and (7) Individualization. When given to 200 university students in six fields of study, acceptable rates of validation were found for all scales except Involvement. The instrument did distinguish between the fields of study for six of seven scales. The CUCEI was established as an efficient instrument for diagnosis of classroom environment and for use in projected case studies. Numerous graphs chart the performance for each field of study. (SLD)

RESEARCH ON PSYCHOSOCIAL ENVIRONMENT EVALUATION AT UNIVERSITY CLASSROOMS: ADAPTATION OF C.U.C.E.I. TO THE SPANISH EDUCATIONAL CONTEXT

CARLOS MARCELO
UNIVERSITY OF SEVILLA
SPAIN

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1. INTRODUCTION

This paper presents the results obtained for the adaptation and validation of the "College and University Classroom Instrument" to the Spanish educational context.

The research on the evaluation of classroom environment from the stand-point of the subjects which participate in this environment has been developed considerably in recent years. The research work by Moos (1979) or Fraser (198) have produced a considerable number of instruments for measuring and evaluating the classroom climate at different educational levels: elementary education ("Classroom Environment Scale"), secondary ("Learning Environment Instrument") or university ("College and University Classroom Environment Instrument").

There are not very much studies which have dealt with the evaluation of university level environment. In Europe we can point to the work by Dippelhofer-Steim (1986) which studies the dimensions of Academic freedom, Degree of interdisciplinarity, Communication and participation, Practice and Social relevance, from various levels: personal, course year, subject area, etc.

In Spain, Villar has elaborated and validated the "Inventory of University Classroom Environment", to measure the environment in the training teachers institutions. This instrument consists of seven scales: Cohesiveness, Satisfaction, Personalization, Task orientation, Innovation, Evaluation, and Classroom management. The study by Villar has shown the design, validation and use given to the IUCE in three colleges of the University of Sevilla (Spain). The instrument has validity with respect to internal consistency reliability, discriminant validity, ability to differentiate between classrooms, and ability to discriminate among students.

The "College and University Classroom Environment Instrument" elaborated and validated by Fraser, Treagust and Denis, as we later describe, is one of the few instruments for evaluating the environment in university classrooms, although it has also been applied to the study of the environment in

alternative high schools (Williamson, Tobin, and Fraser, 1986).

2. Aims of the Study

In this research we have set the following objectives:

a) To describe and evaluate the psychosocial environment of some university and college classrooms.

b) To adapt and validate the "College and University Classroom Environment", developed by Fraser and others to the Spanish educational context.

c) To compare the psychosocial environment in different classrooms of Colleges of the University of Sevilla.

3. The Instrument: "College and University Classroom Environment Instrument"

The CUCEI is an instrument for the evaluation of university classroom environment, elaborated by Fraser, Treagust and Denis (1986), and applied in university classrooms in the United States and Australia (Dusche, Waxman and Morecock, 1986). The final version of the CUCEI consists of 49 items grouped into seven scales: Personalization, Involvement, Student Cohesiveness, Satisfaction, Task Orientation, Innovation and Individualization. The responses to each of the items are made via a scale of four alternatives: Strongly Agree, Agree, Disagree and Strongly Disagree (See Table I). We have only utilised the real version of CUCEI in our study.

4. Samples

The sample of our study composed 200 students of the University of Sevilla (Spain), corresponding to six classes: Faculty of Mathematics (33 students); State College of Teacher Education, in the subject of mathematics (46 students); Private College of Teacher Education in the subject of history (31 students); Faculty of Fine Arts (46 students); Faculty of Economic Sciences (28 students), and Faculty of Pharmacy (16 students).

TABLE 1. DESCRIPTIVE INFORMATION FOR EACH SCALE IN CUCEI

SCALE NAME	MOOS CATEGORY	SCALE DESCRIPTION	SAMPLE ITEM
PERSONALIZATION	R	Emphasis on opportunities for individual students to interact with the instructor and on concern for students' personal welfare	The instructor goes out of his/her way to help students (+)
INVOLVEMENT	R	Extent to which students participate actively and attentively in class discussions and activities	The instructor dominates class discussions (-)
STUDENT COHESIVENESS	R	Extent to which students know, help and are friendly towards each other	Students in this class get to know each other well (+)
SATISFACTION	R	Extent of enjoyment of classes	Classes are boring (-)
TASK ORIENTATION	P	Extent to which class activities are clear and well organised	Students know exactly what has to be done in our class (+)
INNOVATION	S	Extent to which the instructor plans new, unusual class activities, teaching techniques and assignments	New and different ways of teaching are seldom used in this class (-)
INDIVIDUALISATION	S	Extent to which students are allowed to make decisions and are treated differentially according to ability, interest or rate of working	Students are allowed to choose activities and how they will work (+)

R: Relationship Dimension, P: Personal Dimension, S: System Maintenance and System Change Dimension.
Items designated (+) are scored 5,4,2 and 1 respectively for the responses Strongly Agree, Agree, Disagree and Strongly Disagree. Items designated (-) are scored in the reverse manner. Omitted or invalid responses are scored 3.
(Fraser, Treagust and Dennis, 1986, p. 48).

5. Results

Means and Standard deviations

In Table II we presents the mean scores and standard deviations in each one of the CUCEI scales in each of the seven classes, as well as the totals. It can be seen that large differences do not exist between the total mean scores in the different scales of the CUCEI. We can clearly see that the scale with the greatest frequency is Task Orientation (24.36). However, if we analyse each one of the classes we find that the class in the Public College of Teacher Education, in the subject of mathematics, in the scales of Personalization and Satisfaction obtain the highest scores (27.35 and 27.09 respectively). It is also relevant to note the low scores obtained in the scales of Innovation and Individualization in the Economics and Pharmacy classes (15.45, 15.69 and 16, 19.44 respectively)

	TEACHER EDUCATION PUBLIC		TEACHER EDUCATION PRIVATE		MATHEMATICS		FINE ARTS		PHARMACY		ECONOMY	
	MEAN	SD	MEAN	SD	MEAN	SD	MEAN	SD	MEAN	SD	MEAN	SD
PERSONALISATION	27.35	3.43	21.55	6.06	20.21	3.50	24.67	3.72	26.44	3.42	21.34	4.93
INVOLVEMENT	23.61	3.95	22.19	3.78	23.42	3.00	23.07	3.26	23.81	3.56	21.90	3.88
STUDENT COHESIVENESS	25.35	4.50	21.71	7.07	19.94	4.08	18.89	5.78	19.94	6.84	26.21	6.81
SATISFACTION	27.09	3.64	23.87	5.35	21.67	3.61	22.58	5.19	25.19	5.33	22.52	4.69
TASK ORIENTATION	26.59	3.54	25.81	3.95	20.06	4.06	20.91	4.16	27.13	3.80	28.03	3.43
INNOVATION	24.11	4.11	20.71	4.12	19.12	3.69	21.64	2.95	18.00	2.39	15.45	2.34
INDIVIDUALISATION	24.57	4.49	17.87	4.10	20.55	3.50	22.87	3.13	19.44	3.67	15.89	2.93

TABLE II Mean and Standard Deviation of each scale of CUCE

Validation of CUCEI

Internal Consistency Reliability

The calculation of the reliability coefficient of the CUCEI has been done using the alfa coefficient of Cronbach and through split-half reliability coefficient. In Table III we present the results obtained in each of the seven scales for each one of the two coefficients utilised. We can observe that the lowest coefficient is the scale Involvement which is 0.289 according to Cronbach's alfa coefficient and 0.18 according to the formula of the split-half reliability. The remaining values of both coefficients of reliability show some very high results that are somewhat similar to those found by Fraser and others (1986).

TABLE III Internal consistency reliability (alpha coefficient and split half)

SCALE	Alfa Cronbach	Split half
PERSONALISATION	0.695	0.71
INVOLVEMENT	0.289	0.18
STUDENT COHESIVENESS	0.803	0.85
SATISFACTION	0.796	0.81
TASK ORIENTATION	0.617	0.55
INNOVATION	0.539	0.63
INDIVIDUALISATION	0.621	0.65

Discriminant Validity

In Table IV we present the matrix of correlations between the scales of the CUCEI as well as the mean correlation of each scale with the rest, for the calculation of discriminant validity. As can be seen, the scales which obtain the highest mean correlation are Satisfaction (.44),and Personalization (.41). If we analyse the correlation between pairs of scales we can clearly note the high correlation obtained between the scales Innovation and Individualization (.65). We can also clearly note the low correlation between the scales Task Orientation and Individualization (-.01). In general, we can say that

the mean correlations obtained in our study are lower than those obtained by Fraser and others (1986).

TABLE IV Discriminant validity (correlation and mean correlation of each scale with each other six scales)

SCALE	PERSONALISATION	INVOLVEMENT	STUDENT COHESIVENESS	SATISFACTION	TASK ORIENTATION	INNOVATION	INDIVIDUALISATION
PERSONALISATION	1.00						
INVOLVEMENT	0.40	1.00					
STUDENT COHESIVENESS	0.25	0.09	1.00				
SATISFACTION	0.54	0.45	0.29	1.00			
TASK ORIENTATION	0.34	0.22	0.43	0.51	1.00		
INNOVATION	0.43	0.12	0.27	0.42	0.01	1.00	
INDIVIDUALISATION	0.51	0.25	0.12	0.43	-0.01	0.65	1.00
MEAN CORRELATION	0.41	0.25	0.24	0.44	0.26	0.33	0.32

Factor Analysis

We have done a factor analysis of the main components of the scores obtained in the CUCEI, in the sample of 200 students. Table V shows the most important saturations in each one of the seven factors obtained. In Table V the items are grouped into scales of the CUCEI.

Initially, we can clearly see Factor IV,which has obtained some very high saturation in the total number of items which compose the scale of Student Cohesiveness. Likewise, in Factor V we find high saturation corresponding to the Innovation dimension, although in this case, with some negative items. Thirdly, we can demonstrate that Factor I includes, amongst other items of high saturation, five of the seven which compose the scale of Individualisation. Lastly, Factor III is composed of six items with high saturation within the dimension of Personalisation. In the remaining factors found, there are few items with high saturation in each one of the scales of the CUCEI.

TABLE V FACTOR ANALYSIS OF CUCEI

ITEMS	FACTORS							
	I	II	III	IV	V	VI	VII	
1	0.682							PERSONALISATION
15			-0.601					
22			-0.640					
36			-0.569					
43			-0.523					
9		0.505						INVOLVEMENT
16		0.596						
30						0.552		
37							0.593	
44							0.623	
3				0.760				STUDENT COHESIVENESS
10				0.677				
17				0.477				
24				0.554				
31				0.799				
38				0.712				
45				0.485				
18						0.610		SATISFACTION
25		0.643						
32		0.727						
19		0.557						TASK ORIENTATION
26		0.633						
33			-0.502					
40		0.602						
47			-0.619					
6	0.559							INNOVATION
13					0.560			
20					-0.674			
27					-0.539			
34	0.622							
41					-0.612			
48					-0.502			
7	0.585							INDIVIDUALISATION
28	0.731							
35	0.661							
42	0.532							
49	0.619							
EIGENVALUE	5.31	4.02	3.89	3.80	3.36	2.78	2.15	
VP	10.84	8.20	7.91	7.76	6.85	5.66	4.38	

Ability to Differenciate between Classrooms

We have also contrasted the capacity to differenciate between students' perceptions in the different classes. A one-way ANOVA was carried out utilising the classes as the main objective and the individuals as the unity of analysis. In Table VI we present the results obtained. As can be seen, there are significant differences between six of the university classrooms in six of the seven scales of CUCEI. This scale is Implication, in which F is 1.39, with a probability greater than 0.001. Lastly, we have calculated the value Eta 2 which is the ratio between total sums of squares. Table VI shows that the proportion of variance accounted for by class membership ranged from 0.034 for the scale Involvement to 0.433 for Innovation.

TABLE VI ANOVA results for class membership differences in student perceptions on actual form of CUCEI

SCALE	SS between	SS within	df	F	Eta2
PERSONALISATION	1479.77	3886.12	199	16.47*	0.297
INVOLVEMENT	89.22	2497.76	199	1.39	0.034
STUDENT COHESIVENESS	1671.78	6262.89	199	10.36*	0.266
SATISFACTION	792.23	4101.13	199	7.5*	0.16
TASK ORIENTATION	1952.13	2822.23	199	26.69*	0.408
INNOVATION	1778.16	2325.89	199	29.66*	0.433
INDIVIDUALISATION	1099.45	2674.31	199	27.56*	0.415

* p <0.001

6. Conclusions

In this research project we have adapted, and validated the CUCEI for university level classes in Spain. We have found in general acceptables rates of validation except in the scale of Involvement, where Cronbach's alfa value has been very low. On the other hand we founded relationships between the logical and statistical structure of the CUCEI.

The CUCEI has been used in this research only in six classes of the University of Sevilla. We think that it is necessary to widen the study to include a wider and more significant sample of the population. In the same way we decided to establish the relationships which are produced between each one of the scales and the academic performance of the students.

The CUCEI has been established as an efficient instrument for the diagnosis of university classroom environments. We plan to carry out case studies where the test-reflection-retest model is applied. In this way, the awareness of the results of the perceptions of university environment may constitute an element of reflection and self-analysis on the part of the teacher.

ADDRESS OF THE AUTHOR

Dr. Carlos Marcelo
Departamento Didáctica
Facultad Filosofía y Ciencias de la Educación
Avda. S. Francisco Javier s/n
Sevilla
Spain

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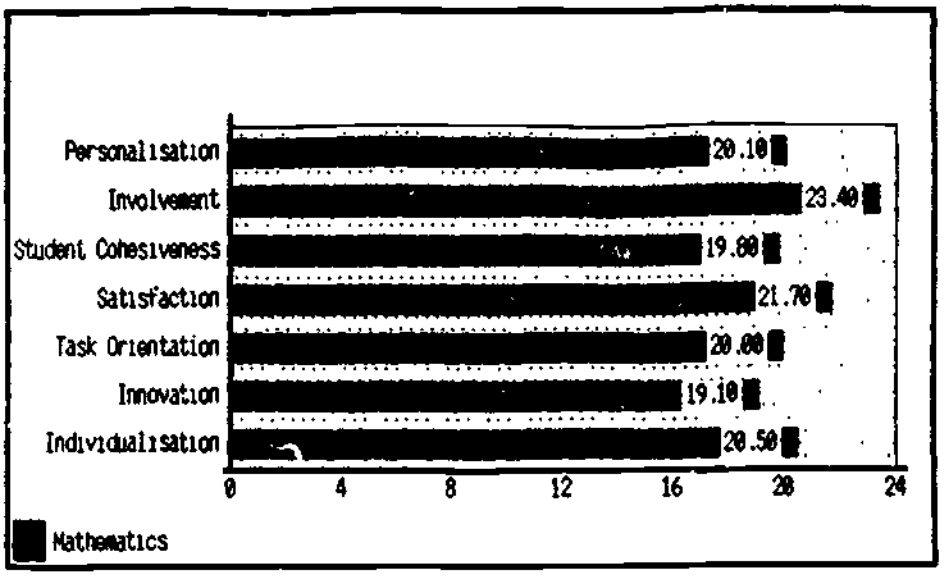
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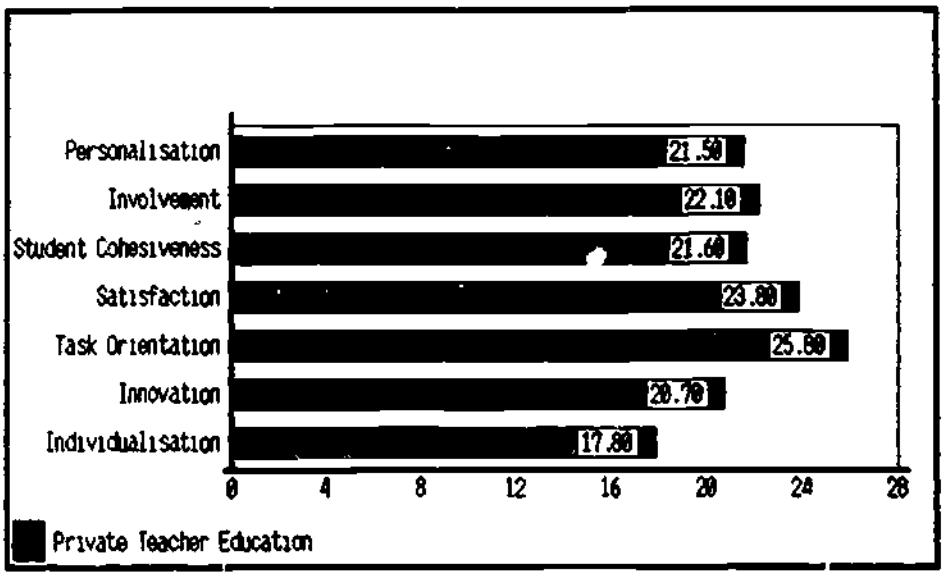
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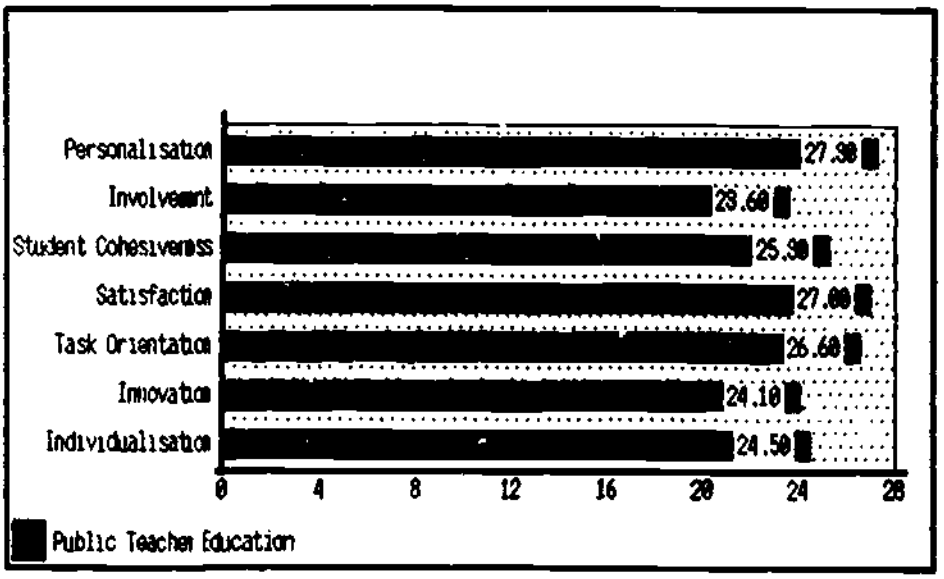
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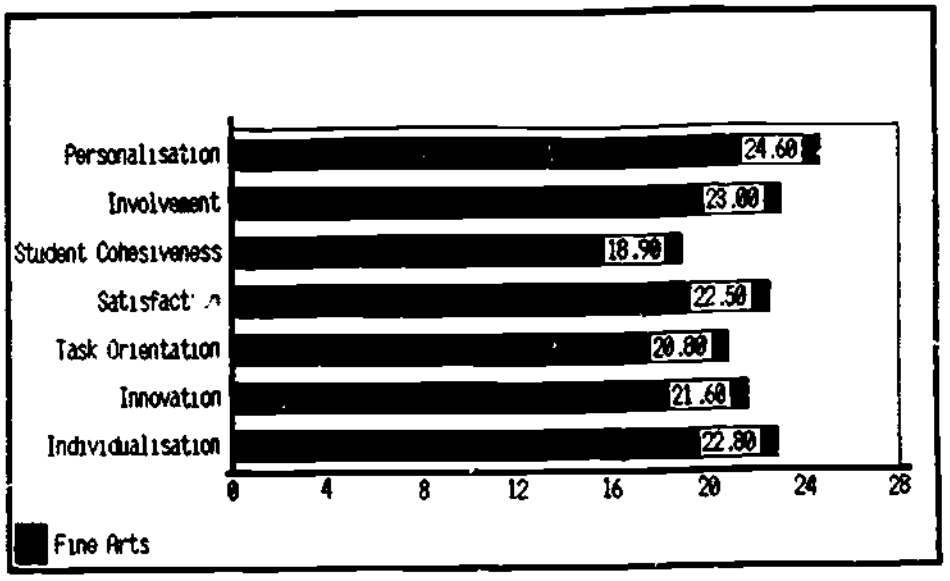
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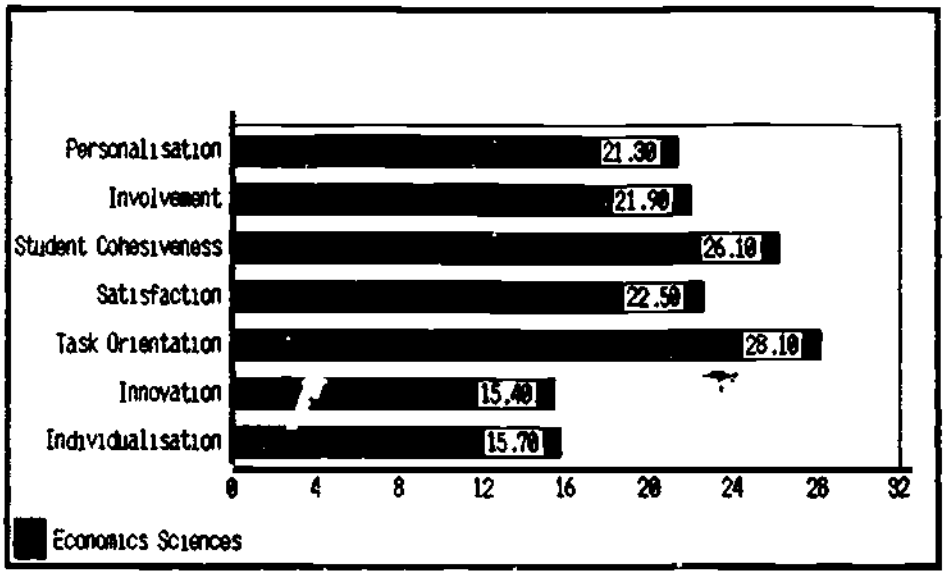
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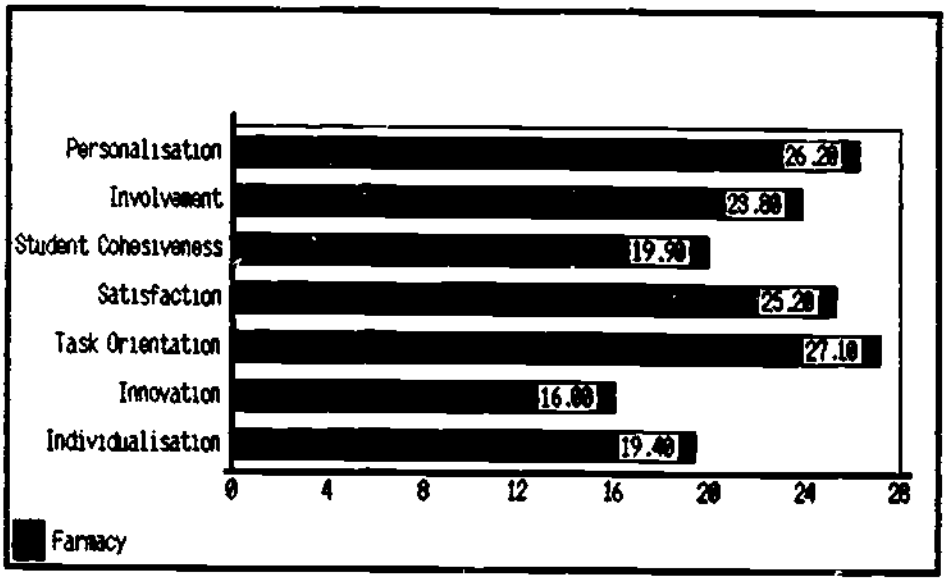
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